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## REMARKS

Applicants thank the Examiner for the review of the claims to date. After entry of this amendment, Claims 1, 5-17, and 21–37 will be pending. Claims 1, 17, 23, and 27 have been amended, Claims 25 and 26 have been amended to correct the spelling of guluronic acid in those claims, Claims 2–4 and 18–20 have been canceled without prejudice, and new Claims 34–37 have been added. No new matter has been added. Support for the amendments and new claims is found throughout the specification and drawings.

## Claim Rejections – 35 USC § 102

The Examiner rejected Claims 1-16 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,592,566 ("Kipke"). The rejection is respectfully traversed.

To anticipate a claim, the reference must teach every element of the claim. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kipke fails to meet the standard for anticipation. The Office Action cited Kipke for the proposition that Kipke teaches a method for forming an endovascular occlusion comprising controlling the injection parameters of purified alginate liquid and a calcium chloride solution into a vascular site (abstract, col. 13, lns. 10–20, and col. 4, lns. 35-47). However, as discussed herein, Kipke does not anticipate because it does not teach all elements of the present invention, particularly as represented by Claims 1 – 16 as amended.

Claim 1 (and Claims 17, 23, and 27) have been amended to further clarify the distinction of embodiments of the present invention from Kipke. As one example, independent Claim 1 as amended claims:

> A method for forming an endovascular occlusion comprising the step of controlling injection of a purified alginate liquid and injection of a calcium chloride solution to a targeted area within a vascular system, wherein injection of the purified alginate liquid and injection of the calcium chloride solution ~~begin or end asynchronously~~ can be at variable injection rates, either within an injection stage or across injection stages. [Deletion in strikethrough, additions underlined]

Thus, as set out in Claim 1, without limiting the scope of the invention, the present invention comprises the novel element "wherein injection of the purified alginate liquid and injection of the calcium chloride solution can be at variable injection rates, either within an injection stage or across injection stages."

In contrast, the cited reference, Kipke, does not teach or disclose injection wherein injection of the purified alginate liquid and injection of the calcium chloride solution can be at variable injection rates, either within an injection stage or across injection stages. Kipke does not teach or disclose any form of staged injection where the injection of the purified alginate liquid and injection of the calcium chloride solution do not occur at the same rate, or where they occur at rates that are variable with respect to the other. Furthermore, Kipke speaks only in terms of predetermined injection rate or rates and precise control of injection rate. This terminology does not cover variable rates during injection, which would imply a non-precise, non-predetermined, or variable rate injection. To further clarify this distinction from Kipke, Claim 1 has been amended to includes the more explicit description "...can be at variable injection rates, either within an injection stage or across injection stages."

In addition, Claims 34 and 35, each depending from Claim 1, have been added to claim certain molecular weight and viscosity ranges.

For at least these reasons, Applicants request that the rejection be withdrawn and that Claim 1 as amended and its respective dependent claims 5 – 16 and 33-35 be allowed.

**Claim Rejections – 35 USC § 103**

The Examiner rejected Claims 1-32 under 35 U.S.C. §103(a) as being unpatentable over Kipke. The Examiner also rejected Claims 1-32 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent no. 5,614,204 ("Cochrum") in view of Kipke. The Examiner also rejected Claim 33 under 35 U.S.C. §103(a) as being unpatentable over Kipke in view of Stabler et al., Biomaterials 22(2001) 1301 ("Stabler"). The rejections are respectfully traversed.

It is well known that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. *Accord* M.P.E.P. § 706.02(j). Moreover, the mere fact that references can be combined or modified does not render the resulting combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F2d 680, 16 U.S.P.Q 2d 1430 (Fed. Cir. 1990).

The above discussion of Kipke's deficits is hereby incorporated. As set out above, Kipke does not teach or disclose injection into a vascular system where the purified alginate liquid and calcium chloride injections can be at variable injection rates, either within an injection stage or across injection stages, as required by independent Claims 1, 17, 23, and 27, as amended, and their respective dependent claims. Because this claim element is missing, Kipke cannot support an obviousness rejection under Section 103(a), and the rejection should be withdrawn and Claims 1 – 32 allowed.

Moreover, with respect to independent Claims 25 and 26, Kipke additionally does not teach or disclose at least the element of providing an ion-permeable balloon to a targeted area in a vascular system and injecting calcium chloride solution into the balloon. Nor are Kipke's deficits cured by combination with Cochrum. The only mention of balloon occlusion in Cochrum appears in its "Background" section at Col. 2, lines 61 – 65. However, there Cochrum teaches against the use of balloon occlusion because it "requires[s] surgical invasion of the patient body." (Col. 2, lines 64-65). Moreover, in addition to demeaning the use of balloon occlusion, Cochrum (and Kipke) does not teach the elements of Claims 25 and 26 wherein a balloon is used in conjunction with the formation of an endovascular occlusion from alginate and calcium chloride, and/or wherein the calcium chloride solution is injected

into an ion-permeable balloon to form an occlusion. Because the combination of Kipke and Cochrum fails to teach all elements of Claims 25 and 26, and because there is no motivation to combine those references in light of Cochrum's denigration of balloon occlusion, the rejection of Claims 25 and 26 should be withdrawn and the claims allowed.

The Office Action also rejected Claims 1-32 as unpatentable under §103(a) over Cochrum in view of Kipke. However, the Office Action acknowledges that Cochrum does not teach controlled and simultaneous administration of vascular occlusive agents comprising alginate and calcium chloride. Moreover, neither Cochrum nor Kipke discloses the novel feature of the present invention of injecting alginate and calcium chloride solution where the purified alginate liquid and calcium chloride injections can be at variable injection rates, either within an injection stage or across injection stages, as required by independent Claims 1, 17, 23, and 27, as amended, and their respective dependent claims. Moreover, as discussed above, the combination of Cochrum and Kipke is inappropriate for rejection of Claims 25 and 26. For at least these reasons, the rejection should be withdrawn and Claims 1 – 32 should be allowed.

Finally, the rejection of Claim 33 over Kipke in light of Stabler should be withdrawn. As discussed above, Kipke does not teach or disclose injection into a vascular system where the purified alginate liquid and calcium chloride injections can be at variable injection rates, either within an injection stage or across injection stages, as required by independent Claims 1, 17, 23, and 27, as amended, and their respective dependent claims. Because this element is lacking, the rejection of Claim 33 (depending from Claim 1) under Section 103(a) should be withdrawn.

Moreover, the deficits of Kipke are not cured by combination with Stabler, and there is no motivation to combine the two references at least because Stabler is nonanalogous art.

The deficits of Kipke are discussed above and are not cured by Stabler. Stabler is not addressed in any way to any method of forming an endovascular occlusion, nor is Stabler an appropriate §103 reference because it is non-analogous art. A patent claim cannot be rendered "obvious" under §103 in light of a prior art reference unless that reference is at least "analogous" to the claimed invention. *Wang Laboratories, Inc. v. Toshiba Corp. et al.*, 993 F.2d 858, 865 (Fed. Cir. 1993) ("The Allen-Bradley patent and X9 SIMM, not being

analogous prior art, thus could not have rendered the claimed subject matter obvious."); *In Re Hans Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992) ("The combination of elements from nonanalogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination."); *see also* MPEP §2141.01(a). So-called "non-analogous" references are not considered part of the pertinent collection of prior art under §103.

Stabler is not from the same field of endeavor as the present invention, nor are the alginate beads of Stabler pertinent to the methods of forming endovascular occlusions of the present invention. To attempt to use Stabler in such a manner is to arrive at the present invention only through the improper use of hindsight. Stabler is not from the same field of endeavor, regardless of the problem addressed, and nor is it pertinent to the particular problem solved by the present invention. *See e.g., Wang Laboratories*, 993 F.2d at 864. Therefore, Applicants submit that Stabler is not an appropriate prior art reference under §103.

Generally, the present application is related to "a method for forming an endovascular occlusion..." Stabler does not address this area at all. Rather, Stabler is addressed only to the evaluation of cell proliferation when cells are encapsulated in alginate beads formed from alginates of certain molecular weights and other characteristics. Specifically, Stabler discloses only molecular weight and its resulting stability for the combination of alginates and poly-L-lysine to produce beads for encapsulating cells and promoting cell proliferation within the bead. Stabler does not teach formation of endovascular occlusions, instead teaching only about gel bead formation by dropping liquid alginate mixed with cells into a bath of calcium chloride that is 3-10x less concentrated than that described in the present application. Because calcium concentration is a known factor in gel stability, the encapsulation technique of Stabler cannot be rightly compared to the endovascular occlusion technique when making assumptions on the effect of molecular weight on gel stability for purposes of occlusion formation. Stabler teaches encapsulation stability as alginates beads that, unlike occlusions formed according to embodiments of the present invention, are formed only *ex vivo* and provide an environment for cell proliferation within the bead. Endovascular

occlusion stability is not defined the same way. Rather, occlusion stability with alginates is taught as a gel that is formed *in vivo* to resist pulsatile blood flow without restoring flow to the occluded area. There is no relevance to potential cell proliferation within an occlusive gel. Indeed, Stabler discloses that the alginate beads formed according to Stabler burst predictably at certain stages of cell growth, teaching away from the suitability of those beads for use in endovascular occlusion. Due to the unrelated nature of bead and occlusive gel formation and gel stability, any correlation to molecular weight also remains unrelated. Thus, the cited disclosure in Stabler is not related to the endovascular embolization technology claimed in the present application, and no one in the area of endovascular occlusion would look to Stabler for the use of alginates of different molecular weights for purposes of endovascular occlusion techniques. For at least these reasons, the rejection of Claim 33 should be withdrawn, and the claim should be allowed.

## CONCLUSION

In view of the above, the pending claims are believed to be in condition for allowance. Accordingly, reconsideration and allowance are respectfully requested and the Examiner is respectfully requested to pass this application to issue.

It is believed that any fees associated with the filing of this paper are identified in an accompanying transmittal. However, if any additional fees are required in connection with the filing of this paper that are not identified in any accompanying transmittal, permission is given to charge Deposit Account 18-0013, under order number 65306-0092 in the name of Rader, Fishman and Grauer PLLC.

If the Examiner has any questions or comments, the Examiner is kindly urged to call the undersigned to facilitate prosecution.

Respectfully submitted,

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